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The Textures of Globalization: Biopolitics and the Closure of Xenotourism

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In this paper, we explore the tensions around a recent controversial development in medical tourism: xenotourism in Mexico. We take this bioendeavour – now ceased – to be emblematic of the global character of contemporary biomedicine, providing insights into the production and operation of scientific knowledge. We explore this through what we call the 'textures of globalization': the anxiety regarding the extent to which Mexico was understood as an (in)appropriate venue for the generation of novel knowledge on xenotransplantation, and as a location for xenotourism. These tensions, which oscillated between calls for individual freedom (choice) and global regulation (standardization), ultimately led to the closure of xenotourism in Mexico.

Keywords: xenotransplantation, biopolitics, globalization

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Introduction: The Problems of Xenotransplantation (XTP)

Much of the recent sociological attention to globalization – whether it be economic, political or cultural - has focused on global flows of money, goods, people, tokens, wastes, and so forth (e.g. Urry 2000). Furthermore, for thinkers such as Giddens (e.g. 1999) and Beck (e.g. 2006), a globalized modernity is one which is characterized by the increasing spread of risk: a kind of forced cosmopolitanism where dialogue with

the other is unavoidable. Our interest in this paper is with the relationship between the movement of people, healthcare, science, regulation, knowledge, and performances of globalization, in an environment marked by risk and competing politics. We explore these themes through the global reactions to a new form of medical tourism[1] that has been subsequently closed due to such tensions: xenotourism in Mexico[2]. Specifically, we situate xenotourism in relation to what we call the 'textures of globalization'.

We use the term 'texture' to connote two inter-related aspects of globalization: its unevenness and textuality. Regarding the former, it is a commonplace to note that globalization proceeds in fits and starts, where some flows emanate from particular centres or cores, while sneering at outposts or peripheries (e.g. Urry 2003). We thus seek to examine our example of medical tourism in the ways that certain 'core' centres attempt globally to disseminate particular epistemic, regulatory and ethical goods. These processes of circulation go hand in hand with accounts of 'the global' – the idea that particular scientific and clinical knowledges, regulatory procedures and ethical standards deserve to be globally distributed and to become the global standard to which all must adhere.

With this in mind, we therefore understand the core to be a globally distributed network of scientists who, in their like-mindedness, are tied together formally as a well connected, cohesive group of professional actors. Unlike Schott (1998), however, we do not identify the core or centre to be necessarily located at a specific place or based around a particular scientist. Nonetheless, we acknowledge that the unequal relationship between the core and periphery tends to replicate traditional divisions between the West and the non-West. As a result, science generated in the West still tends to dominate the international scientific community networks, which allows those networks 'to define the very way of doing science' (Hwang 2005, p. 393). This

is witnessed in the first texture of globalization, where power to determine what constitutes science is largely controlled by the core at the expense of the periphery.

This also connects to the second connotation of 'texture': globalization has a rhetorical or performative dimension (e.g. Connell 2007, Scott 1997). The core argues for and enacts a particular account of the global, which is confronted and challenged by competing versions emanating from the periphery. These peripheral actors and locations, which are typically non-Western and may be non-native English speakers, are expected to rely on scientific knowledge generated by the core, emergent from the first texture of globalization and the unevenness of the core-periphery relationship. This means 'they have the disadvantage of their knowledge claims requiring approval from an international scientific community [the core] through the self-referential system in science and technology' (Hwang 2005, p. 393). However, the rise of new centres of biotechnological innovation with different geopolitical and cultural-ethical contexts, allows some peripheral locations to push ahead with forms of biomedical research and medical tourism that remain too controversial in the West (Bharadwaj and Glasner 2009). The periphery may become a new centre of biomedical development and knowledge production, or may resist pressures from the core's insistence on adhering to a desired global scientific approach. This may result in significant difficulties for the periphery to advance their counter-rhetorics. While such accounts from the periphery may serve in the warranting of desired forms of circulation, they themselves can circulate unevenly, being subjected to the unevenness of the first connotation of 'texture'.

These tensions in the textures of globalization reveal the competing versions over the knowledge and future of XTP, including the appropriate timing and geographical location of xenotourism. Our account then, while gesturing to

Wallerstein's (1991) account of core and periphery in a world system, argues for a more reflexive and less deterministic relationship between the core and its other. That is, we see the textures of globalization largely operating at odds with each other, with the performances of globalization allowing peripheral epistemologies and values to critique existing practices and processes determined by the core that, in our case study, are largely resisted by the core through the unevenness of globalization. In addition, these tensions between the scientific core and the scientific periphery reveal continuing controversies over the future and the design of XTP.

Our examination focuses on how the core's desired global regulatory design for XTP and its accounts of xenotourism in Mexico generated political pressure to enforce control and regulatory standardization on the periphery. This enactment of the core - the members of the International Xenotransplantation Association (IXA), who are primarily located in the USA, Europe, and Australia - ultimately eventuated in the closure of xenotourism in Mexico (the periphery). Researchers located in this peripheral location had difficulty in mobilizing resistance against the core, as they lacked the connections and cohesiveness of powerful alliances. To begin this analysis, we shall initially outline what XTP is; next, we shall describe its emergence in Mexico as xenotourism; then we shall detail the subsequent pressure from the XTP core (IXA) that lead to xenotourism's cessation in Mexico.

XTP

XTP is the transplantation of living animal (typically porcine) cells, tissues or organs into human recipients. Various human health conditions are potentially treatable with XTP, including Alzheimer's disease, haemophilia, Parkinson's disease, chronic pain,

Huntington's disease, Type-1 diabetes, organ disease and failure, and atherosclerosis (Cooper and Lanza 2000).

Countries around the world have differing policies on XTP, with many possessing varying degrees of strict regulation (for example, Canada, UK, New Zealand, Australia and USA). Many nation-states have limited or no legal frameworks for XTP. In Europe, the response to regulatory inconsistency was a call for developing and standardizing European guidelines and regulations, and the request that nation-states with no frameworks place a moratorium on XTP (Council of Europe 2003).

These approaches to XTP are, in general, a reaction to the possibilities of cross-species infection. The new intimacies created by XTP could mean viruses not previously capable of infecting humans may become infectious, with the potential to generate new human epidemics (Bloom *et al*. 1999, Gold and Adams 2002). As in the case of other human infections of animal origin (e.g. swine influenza, avian influenza and severe acute respiratory syndrome), viruses are not constrained by geopolitical borders, meaning that the potential risks of XTP produce local, national and global angst (Gold and Adams 2002).

Xenotourism: the Mexican Context

The anxiety over potential infectious risk in XTP has increased with xenotourism, where XTP was opened to the international health marketplace, becoming a form of transplant tourism. This performance of XTP exposes the textures of globalization at work, operating within novel forms of biomedicine that explicitly target neoliberal 'clients' who are taking action with regards to their health, such as medical tourists.

Research undertaken in Mexico at the Laboratorio de Xenotrasplantes under Dr Rafael Valdés has been controversial. At this research centre, knowledge production centred on the use of porcine insulin-producing cells to treat Type-1 diabetes. The aim of this xenotherapy was to obtain better metabolic control for the human recipient by reducing their insulin dependency, or possibly facilitating insulin independence. The results were promising. Valdés (in Armstrong 2004, Secretary's Advisory Committee on XTP and L.A.D. Reporting Company 2004, Valdés-González *et al*. 2005b, 2007) reported that some patients no longer required insulin injections, while others had reduced insulin requirements (Check 2002, Barton 2005, Buhler 2005).

The procedure was approved as therapy in August 2004 by the Department of Health and the National Center for Transplant (Mexico). In July 2004, Valdés (in Armstrong 2004) indicated that international patients had received this XTP; it appears that only two international patients from Canada, one adult woman and one male child, received it (Jiménez 2006). The cost of the treatment was reported to be approximately US$30,000 (Armstrong 2004), which did not include pre-transplant appointments and out-of-hospital expenses such as airfares and accommodation. Furthermore, this xenotransplant involved two operative visits to Mexico. At the initial visit, two stainless steel and Teflon cylinders were implanted in the recipient. Two months later, porcine islet and Sertoli cells were inserted into the cylinders (Xenomexico n.d.). Between the two surgeries, the xenotourist could choose to stay in Mexico or return home. Patients were also encouraged to return for subsequent visits: 'Dr. Valdes told me I could do better if I had more pig islet cells. I would like to go back' (xenotourist Teresa Hibbert in Jiménez 2006, p. A4).

However, this treatment was soon shut down. Pressure emanating from the

XTP core (the IXA) led to a review by Mexico's National Committee of Bioethics, which asserted that the therapy should not continue on the grounds of ethics and safety (Jiménez 2006, Sykes *et al*. 2007).

Xenotourism's emergence in Mexico was facilitated by different geopolitical and cultural-ethical contexts. These disparities allowed peripheral locations to become new players in biomedical production, dislocating traditional divisions between North/South and developed/less developed worlds. For example, Bharadwaj and Glasner (2009) highlight how the sociocultural context of India designates a different status of the embryo which, along with the biotechnological ambitions and support of the nation-state, allows human embryonic stem cell (hESC) research to proceed and to produce local hESC lines for the global market. In contrast, our case study of xenotourism highlights how the core did not accept that knowledge and innovation could be developed differentially to their own standards and norms. As the periphery's science values and practices differed to that of the core, the core viewed this as threatening on a number of levels, and launched an active and ultimately successful campaign to halt xenotourism in Mexico. The possibility of knowledge, innovation and bioproducts being generated by the 'other' with their 'other ways' was rendered impossible. Thus, the core sought to bind the periphery to the system generated and practised by the core. To explore these issues, we now turn to examining how the core and periphery constructed competing knowledges on XTP and xenotourism, which created pressures between the epistemology, authority, and the biological (or biopolitics),[3] and fed the textures of globalization. These tensions have been played out in media interviews and medical and scientific journals, where Valdés consistently needed to confront or defend his (peripheral) approach and position in the face of the strong alliances of the IXA.

The Risky Business of XTP and Xenotourism

We have already alluded to concerns surrounding cross-species infection in XTP. Of particular concern are endogenous retroviruses that are spread to subsequent generations through germ-line integration. These are often dormant in the host species, but can be activated in a new species once the protective, physical barriers have been crossed. In pigs, the animal source of choice for XTP, these are called porcine endogenous retroviruses (PERV). After Patience *et al*. (1997) established PERV could infect human cells in vitro, concerns were raised about animal-to-human and subsequent human-to-human infectivity. While subsequent in vivo studies of humans who have received porcine xenotransplants have found no evidence of PERV (e.g. Paradis *et al*. 1997, Pitkin and Mullon 1999, Garkavenko *et al*. 2004), it remains a highly contentious subject with a wide margin of uncertainty. As a result, a common argument amongst XTP-advocates is that PERV do not infect humans in vivo (e.g. Fishman and Patience 2004). The message here is that XTP should be able to proceed - albeit under regulation - but the field remains firmly trapped: while the apparent risk of infection is small, any problem could be devastating.

For the XTP core, this risk tends to be selectively assessed, depending on where in the world and by whom the clinical trials or therapies are being performed. Thus, while infectious risk from XTP is a real, global risk because of XTP itself, the XTP core alters risk from scientific procedures and processes and the combination of alien biological substances, to that of place, where the geographical location at which XTP occurs facilitates a localized understanding of the reality of risk. For example, D'Apice (Past President (2003-2005) of the IXA, in Armstrong 2004) echoes the

sentiments of the IXA and fellow IXA Past President Megan Sykes (2005-2007) (e.g. Sykes *et al*. 2003b, 2004b, Sykes 2005) and, despite being comfortable with the existing scientific data on PERV, expresses discomfort over xenotourism:

> If there is a risk of transmission of these porcine infectious agents, not just to the patient but from the patient to anybody else, and all of those things have to be taken care of in advance. You have to have facilities and protocols in place to prevent, monitor, to know what's happening. And xenotourism represents a breach of safety. (D'Apice in Armstrong 2004; radio broadcast)

Consequently, an increased threat of a global pathogen is connected to the unevenness of knowledge production and oversight, which is narrated in terms of inappropriate national and international regulatory frameworks to deal with XTP and its potential negative outcomes (e.g. McKenzie *et al*. 2003). The perception of a lack of restrictive guidelines in less developed nations also creates an increased sense of risk from, as opposed to for, these nations. The reactions from the XTP core to xenotourism in Mexico, as a peripheral location, are cases of these textures of globalization. These responses tend to also be influenced by the fear of 'xeno-havens'.

Viewed as operating at peripheral sites, xeno-havens allow experimentalists, whose procedures have been rejected in other parts of the world, to exploit lax legal and ethical frameworks (Daar 1999). Xeno-havens are further believed to amplify global contagion due to a perceived lack of regulatory oversight, scientific standards and patient monitoring (Sykes *et al*. 2003a, 2004a, 2004b). Accordingly, there is much discussion around global standardization: the need to establish international

guidelines, collaboration and surveillance strategies (e.g. McKenzie *et al*. 2002, O'Connell 2004, Buhler 2005, Sykes *et al*. 2003a, 2003b, 2004a, Sykes 2005, Sykes and Cozzi 2006), on which the IXA have been very vocal: 'Without organised international cooperation, the best efforts at minimizing these risks in countries with appropriate regulatory oversight may be thwarted by the free travel of individuals undergoing unmonitored XTP in countries lacking such regulation' (Sykes *et al*. 2004b, p. 119). This has resulted in an international internet inventory designed to document XTP human clinical trials (Buhler *et al*. 2006), but it is not a global or even national requirement to document, lodge or share such information. Therefore, despite these efforts of global standardization from the XTP core (emphasizing the unevenness of globalization), there are really no effective mechanisms of global regulation for the generation of XTP knowledge or for managing global threats, let alone to enforce regulations over the sovereignty of scientific decision-making within the nation-state (the performance of globalization). Although risk society has 'gone global', and even though global flows have facilitated and even necessitated the creation of global institutions, there is no 'World Police' that can mimic, patrol or control these flows and performances.

Such arguments can be contextualized further in relation to the accepted flow of clinical trials to the periphery: from the developed to the less developed or developing world. Such practices, which show both the unevenness and textuality of globalization, are undertaken by multinational pharmaceutical companies, private organizations and publicly-funded research institues. Outsourcing to places such as India, Indonesia, China, Thailand and Mexico takes advantage of large populations with untreated diseases, reduced costs for labour and infrastructure, and widespread vulnerability and poverty. As indicated by concerns around xeno-havens, however,

many clinical trials flow to the periphery to bypass strict regulations at the core (Nundy and Gulhati 2005), or what we call ‘expatriate core trials’. Thus, xeno-havens could benefit the core (IXA), as they provide regulatory flexibility at the periphery for expatriate core trials of ethically controversial biosciences. Perhaps Western anxiety does not stretch to expatriate core trials because they are performed by the core-at-a-distance, and contained within a clinically controlled and regulated scientific environment that satisfies what the core deems as scientific rigour (or economic interests). For example, the Australian-based biotechnology company Living Cell Technologies (LCT) outsourced its trials of DiabeCell®, a treatment for Type-1 diabetes using porcine islet cells, to the Sklifosovsky Institute in Moscow, which was monitored by the Boston-based company Geny Research Group (Living Cell Technologies 2007). This allowed LCT to bypass the now expired XTP moratorium in Australia and tight XTP regulations in New Zealand. At the same time, this expatriate core trial revealed the unevenness of knowledge that exists within the core, as the credibility of this trial was subject to question by the IXA: ‘It seems possible that Russia may have been chosen as the location for these [LCT] studies precisely because its national health authorities do not have such a standard for oversight and monitoring of xenotransplantation trials’ (Sykes in Grose 2007, p. 391). In other words, there is a desire to control and contain XTP within the geopolitical confines of the core while exploiting the geopolitical conditions of the periphery, as long as this is performed by the core.

Xeno-havens may also have the capacity to attract scientists from other parts of the world who cannot conduct their research under local conditions and restrictions. Risk assessments in the core may lead to the loss of the best and brightest scientific minds to competing locations, which could reap the prestige and financial

rewards of any scientific breakthrough. In this scenario, the nation-state's restrictions on such biosciences are a performance in reaction to the regulations – or lack thereof – in other nation-states. Consequently, the demand for and assessment of risk is an economic and strategic decision by the nation-state so as not to be 'left behind'. Potential economic reward is a strong research motivator.

A related point is that the unevenness of globalization drives the XTP core to construct some geographical locales as peripheral and different, and therefore operating as 'other'. This can be witnessed with the reactions to the LCT clinical trial in Russia. These responses can occur despite regulatory authority and guidelines that may exist at these locales, and oversight by institutions geographically located within the core. Ultimately, it is through the core's performance and creation of difference to the other that risk is born. This enactment of the textures of globalization reveals XTP is only conceived of as risky because it is performed as xenotourism (or at a xeno-haven) in a location that: (i) is not first world, (ii) is perceived as not adhering to the XTP core's (Western) responsible and ethical scientific and regulatory rigour, and (iii) lacks the know-how and expertise to understand and unravel the difficulties of XTP, including risk management. This is a multifaceted reading of XTP, whereby it is non-risky or an abstract risk if practised in correct home locations, but becomes risky when performed outside of the core, by those not part of or not adhering to the agreed practices of the IXA. The periphery issues an epistemological challenge to the core, which then asserts its own epistemologies. The XTP core's reaction to such battles reveals that they deem that only certain locations have the correct knowledges to perform XTP, and XTP must be evaluated within the frameworks they designate.

This challenge, however, is not simply based on knowledge-production and geographical locale. It also connects to perceptions of economic benefit and loss, or

the bioeconomy. For example, it is feared that 'unregulated' countries may use intellectual property rights to prohibit access to knowledge. In this light, developing nations would derive bioeconomic benefits of xenotourism, while developed nations would not. Some critics thus believe the present Western restrictions on XTP not only deny individuals hope and choice, but jeopardize investments of time, economic resources and potential bioeconomic benefits (Barton 2005, Sykes 2005). National restrictions and bans additionally prohibit researchers from realizing the clinical outcomes that if successful, will bring prestige, peer recognition and financial reward. Ironically therefore, tight regulations at the XTP core are not seen as beneficiary over weaker guidelines that allow XTP clinical trials to proceed, but the unevenness of globalization creates pressures on the periphery to conform to such regulations. This could also be read as the core's resistance to niche markets that are located 'elsewhere'. Thus, the textures of globalization reveal here that the core still wants to access what is occurring at the periphery in order to evaluate the knowledge generated and its usefulness, yet such performances are limited given the desire of the core to enforce oversight and regulatory command.

What begins to emerge from our analysis, then, are questions of control and coordination, and whence these emanate. Valdés' work at the Laboratorio de Xenotrasplantes was questioned by the XTP core on a number of grounds, including an apparent lack of preclinical studies, issues of informed consent amongst adolescent national trial participants, the need for animal experimental trials, quality of the animal source, and concerns surrounding rigorous monitoring of infectious diseases (Birmingham 2002, Check 2002, D'Apice in Armstrong 2004, Buhler 2005, Ricordi in Jiménez 2006; Sykes *et al*. 2006, 2007). We do not take sides on these issues, but it is worth noting that these accusations occurred despite Valdés receiving ethical

approval from his home institution and the National University of Mexico Medical School, as well as Mexico having its own laws and regulations that oversee clinical trials (Valdés 2002, Valdés-González 2002). Of further concern to D'Apice (in Armstrong 2004) and the IXA (Sykes *et al*. 2006, 2007), is the lack of transparency and evidential proof, asserting that Valdés' work has not been subject to the usual processes of peer review that, for the core, is a process that guarantees status and subsequently confers authenticity. As a result, Valdés' work is marginalized:

> We know that these patients have been transplanted, but that it's never appeared in press - raises the question of well, you know, did it work at all? How do we know? Why didn't it appear in press? Is it that they haven't tried to publish it or has it been submitted for publication and people have said 'This isn't worth publishing, it's not up to standard'? It raises doubts about the results claimed. (D'Apice in Armstrong 2004, radio broadcast)

Of further concern to the core are public perceptions of their scientific endeavour. That is, the XTP core feared xenotourism in Mexico would denigrate the biovalue – 'the value to be extracted from the vital properties of living processes' (Rose 2007, p. 32) - of XTP as a scientific endeavour. As indicated previously, here is much to be gained from successful XTP, from international recognition to financial reward. The desire to protect biovalue also fed into Valdés' marginalization from the core. Valdés was seen to compromise this biovalue through his counter-performance that challenged the epistemic and ethical-regulatory approaches of the core. This is largely narrated by the core in terms of risk management. International standardization and

regulation is therefore seen by the core as required to protect this biovalue, and not to tarnish it in the eyes of wider global public and political actors who control (or influence the control) of research funding (McKenzie *et al*. 2002):

> IXA isn't some super-conservative group. We are the people most invested in seeing xenotransplantation succeed. But we understand the need for caution and we think it is dangerous when people raise public expectations for success falsely. (Professor Megan Sykes, IXA Past President in Jiménez 2006, p. A4)

Consequently, the desire is to protect against what is construed to be the potential adverse effects of sciences that function outside of the scientific proper (the core) (Harding 2003). Operating through such rhetoric is again the uneven power of scientific normalization in knowledge production. Particular scientific processes and epistemologies in XTP research are privileged, and pressure is placed on those not seen to work within the norms to conform. As a result, the push from the XTP core is the universal standardization of (their) knowledge. Seeking control over XTP and xenotourism allows the core to distance itself from any controversy that could compromise further research and XTP's potential biovalue. This hegemonic push from the core, however, is resisted and contested by competing scientific epistemologies that are informed by their own politics, knowledges, ideologies and cultures, as seen in Valdés and LCT. Marginalization from the core works thus: the periphery rejects universal scientific standardization, which warrants a counter-rejection from the core, but these counter-discourses are then met with hostility. As a result, there are ongoing battles over the globalized performances of XTP and

xenotourism. The scientific standardization emanating from the West (the XTP core in this case) is limiting, and the ability to consequently conceptualize external knowledges and developments becomes difficult (Harding 2003). XTP and xenotourism cannot be considered neutral, objective developments.

Significantly, this hegemonic push occurs despite Valdés attempting - at least in part - to silence his critics. Valdés has sought to adhere to the core's expectations by publishing some of his work (see Valdés-González *et al*. 2005a, 2005b, 2007), but the IXA continued to assert the lack of evidential, independent proof (Sykes *et al*. 2006): 'it should be noted that was the unanimous conclusion of the IXA Council and Ethics Committee that this clinical trial of pig-to-human islet xenotransplantation [in Mexico] should not proceed' (Sykes *et al*. 2007, p. 90). There have also been calls to forbid researchers such as Valdés from publishing their work unless they demonstrate adherence to the practices of the core, including adhering to the IXA's guidelines, which should be globalized (McKenzie *et al*. 2002, Sykes *et al*. 2003b, Sykes and Cozzi 2006). This unevenness is confronted by Valdés' performance, whereby he draws upon a conflicting and devalued epistemology, the embodied knowledges and embodied experiences of his patients and their XTP treatment:

> This procedure has worked well and we have never had any complications in any patients in five years. It isn't a cure, but we have stopped chronic damage to the eyes, to the kidneys and nerves caused by diabetes. (Valdés in Jiménez 2006, p. A4)

> We stand by our results based on the potential therapeutic success, which is reduction, or even suppression of exogenous insulin needs without immunosuppression. (Valdés in Birmingham 2002, p. 1047)

The IXA, however, remained unconvinced by patient self-reporting in their quest for scientific and metabolic data (e.g. Sykes *et al*. 2006, p. 371, 2007, p. 90) or what they constitute to be rational, scientific, valid knowledge. This fight against global heterogeneity in XTP means that multiple translations, including creative and alternative thinking, are inappropriate in high risk biosciences (particularly those with a potentially high biovalue). These practices are also strategic: a way of halting different options and treatments, and 'a way of enforcing or sustaining a kind of socio-technical or socio-cultural stasis' (Barry 2001, p. 212). Again, this is also a way of separating correct (core) and incorrect (peripheral) scientific knowledges, procedures and practices. The core's reaction to Valdés can be seen as a retrospective attempt to stifle invention and control it through standardization. Although the standardization of 'science' needs to maintain 'sciences', as plurality is important for scientific advancement and development (Harding 2003), this case reveals that science must be ultimately regulated and managed within the XTP core's norms in order for it to be deemed worthy.

These sorts of authority emerge out of the unevenness of the textures of globalization, although counter-rhetorics always exist, resisting the stabilization of authority. Undoubtedly, the 'mavericks' in novel transplant technologies, such as Valdés, feel the attacks on their work are influenced by mechanisms of control from the core. At the same time, by restricting the details of his work to patents (Valdés-

González 2002), Valdés has prevented knowledge dissemination and, potentially, the further development of XTP. However, patenting is not unreasonable in high risk and expensive biomedicines, though it does limit creativity and further counter-rhetorics. Consequently, in the case of xenotourism in Mexico, the counter-performance of Valdés adds to the unevenness of globalization by restraining or limiting knowledge production.

Conclusion

XTP and xenotourism are represented as sources of global risk by the mobilization of a number of highly flexible criteria: flows (of human and nonhuman bodies, knowledge and technology), materials (body parts, animal cells and PERV), scientific processes (clinical trials, peer review and patents) and regulation (ethics and standards). The pliability of geopolitical boundaries and the potential dangers of xenotourism (and other forms of medical tourism, such as hESC tourism), means that the possible negative outcomes of surgical application require global attention and concern. The premise of calls for global standardization is that regulatory standards in less developed countries, such as Mexico, are lax. Those operating within the core see themselves as possessing tighter and superior standards, regulations and knowledges, which guard against a range of medical, ethical, legal and economic problems. These do not exist in 'maverick' localities, which should replicate and follow the core's Western standards – not for their own sake alone, but ultimately for the sake of the world. The desire of the local practitioners in Mexico to push their therapies globally was thereby counteracted by the core's practitioners perceiving their own standards to be global - or, at the very least, worthy of being enacted globally. As a result, the reactions to xenotourism in Mexico can be seen as a movement to retain boundaries

between the core and periphery, while simultaneously seeking to breakdown such differences through universal standardization. We may think of this as a type of medical imperialism.

The shifting textures of globalization in relation to xenotourism reveal that the core has used mass media and the institutions of science to circulate its accounts of the potential global risks associated with xenotourism. In the process, a particular texture of the global has emerged: the core is framed - as in Latour's (1987) terms – through centres of calculation, but now such calculations more explicitly encompass the regulatory and ethical as well as the epistemic. By contrast, Valdés' mobilization of xenotourism deployed a different globalizing account (or enacted globalization in different ways). For example, emphasis was placed upon the need for clinical treatments for suffering patients: the betterment of patients' conditions was raised to something akin to a global moral imperative. What we are left with, then, is two globalizations in competition, which generate the complex geopolitical texture of the global we have attempted to grasp here.

Notes

[1] We acknowledge the term 'medical tourism' is broad, and we merely have the space to gloss it here. In this paper, we understand medical tourism as the travel of patients to a foreign and international locale with the explicit purpose to receive surgically invasive medical services, interventions and/or treatments.

[2] It is forecasted that 15.8 million Americans will receive medical treatment internationally by 2017 (Mitka 2009). However, the extent of medical tourism is unclear.

[3] We conceive biopolitics broadly as 'strategies involving contestations over the ways in which human vitality, morbidity, and morality should be problematized, over the desired level and form of the interventions required, over the knowledge, regimes of authority, and practices of intervention that are desirable, legitimate, and efficacious' (Rose 2007, p. 54).

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